CLAIMS

1. Method for processing data of a picture to be displayed on a display panel with persistent luminous elements during a frame comprising a plurality of subfields, each subfield comprising an addressing phase during which the luminous elements of the panel are activated or not in accordance with the picture data and a sustain phase during which the activated luminous elements are illuminated by sustain pulses, characterized in that it comprises the following steps :

- computing, for each subfield, the amount of activated luminous elements in each line of luminous elements of the display panel, called line load,

- calculating, for each subfield, the maximal difference of line loads of two consecutive lines of the display panel, and

- selecting, for each subfield, a sustain frequency in accordance with its maximal load difference in order to reduce line load effect.

2. Method according to claim 1, characterized in that the calculation of the maximal load difference is only carried out only for lines whose load is greater than a minimal load.

3. Method according to claim 2, characterized in that the minimal load for a line is equal to 10% of the amount of luminous elements in a line of the display panel.

4. Method according to one of claims 1 to 3, characterized in that the maximal load difference between two consecutive lines of the display panel is calculated, for each subfield, on the current frame and a plurality of frames (T-1) preceding said current frame and in that the maximal load difference

used for selecting the sustain frequency is the mean value of the maximal load differences calculated for said plurality of frames.

5. Method according to one of claims 1 to 4, characterized in that the number of sustain pulses of each subfield is adjusted in accordance with the number of luminous elements to be activated for displaying the current picture and with the selected sustain frequency for said subfield.

6. Method according to claim 5, characterized in that, for adjusting the number of sustain pulses of each subfield in accordance with the number of luminous elements to be activated for displaying the current picture and with the selected sustain frequency for said subfield, it comprises the following steps :

- measuring a first average power level (APL(t)) representative of the number of luminous elements to be activated for displaying the current picture,

- calculating, for each subfield, an adjustment coefficient (Adj(n)) corresponding to the ratio between the selected sustain frequency and a standard sustain frequency,

- calculating a total amount of sustain pulses (Sum(t)) in a frame, said total amount corresponding to the sum of elementary amounts of sustain pulses, each elementary amount of sustain pulses being relative to a subfield and being the product of a maximal amount of sustain pulses for said subfield with the adjustment coefficient of said subfield,

- computing a second average power level (APL'(t)) representative of said total amount of sustain pulses (Sum(t)) in a frame, and

- selecting, for each subfield, a number of sustain pulses in accordance with the maximal value of said first and second average power levels (APL(t),APL'(t)).

7. Method according to one claim 1 to 6, characterized in that it further comprises the following steps :
- encoding the picture data into subfield data,
- calculating the load of each subfield on the basis of said subfield data, and
- adjusting the number of sustain pulses of the subfields on the basis of their loads in order to have a same relation of proportionality between the luminance produced by the persistent luminous elements for the subfields and their weights.

8. Method according to Claim 7, characterized in that, for adjusting the number of sustain pulses of a subfield, it comprises the following steps :
- providing a first number of sustain pulses (NB_1) for said subfield,
- defining a correction value to be subtracted to said first number of sustain pulses on the basis of the load and the first number of sustain pulses of said subfield;
- subtracting said correction value from said first number of sustain pulses in order to have a second number of sustain pulses (NB_2) for said subfield.

9. Method according to Claim 8, characterized in that the correction values of the subfields are defined by a look up table with the load and the number of sustain pulses of said subfield as input signals.

10. Method according to Claim 9, characterized in that the correction values stored in the look up table are achieved by the following steps :
- measuring the luminance produced by a plurality of luminous elements of the display means for all first numbers of sustain pulses comprised between 1 and the first number of sustain pulses M of the highest weight subfield and for a plurality of non-zero loads,
- determining, for each one of said first numbers of sustain pulses and each one of said loads, the luminance attenuation compared with a reference

luminance measured for the same number of sustain pulses and the highest one of said loads, and

- computing, for each one of said first numbers of sustain pulses and each one of said loads, the correction value by multiplying the determined luminance attenuation with said first number of sustain pulses.

11. Method according to Claim 9, characterized in that the correction values included in the look up table are achieved by the following steps :

- measuring the luminance produced by a plurality of luminous elements of the display means for a specific first number of sustain pulses and for a plurality of non-zero loads,

- determining, for each one of said loads, the luminance attenuation compared with a reference luminance measured for the highest one of said loads, and

- computing, for each one of said loads and for said specific first number of sustain pulses, the correction value by multiplying the determined luminance attenuation with said specific first number of sustain pulses.

12. Method according to Claim 11, characterized in that the specific first number of sustain pulses is greater than 20.

13. Method according to one of Claims 8 to 12, characterized in that the second numbers of sustain pulses of the plurality of subfields are rescaled in order to redistribute in each subfield an amount of the subtracted sustain pulses proportionally to its second number of sustain pulses.

14. Method according to one of claims 7 to 13, characterized in that, before the step of adjusting the number of sustain pulses of each subfield on the basis of its load, said number of sustain pulses is rescaled in order that the average power level needed by the display means for displaying the picture be approximately equal to a fixed target value.

15. Method according to one of claims 7 to 14, characterized in that the calculation of the load of a subfield consists in counting the luminous elements to be illuminated during said subfield.

16. Device for processing data of a picture to be displayed on a display panel with persistent luminous elements during a frame comprising a plurality of subfields, each subfield comprising an addressing phase during which the luminous elements of the panel are activated or not in accordance with the picture data and a sustain phase during which the activated luminous elements are illuminated by sustain pulses, characterized in that it comprises :

- means (15) for computing, for each subfield, the amount of activated luminous elements in each line of luminous elements of the display panel, called line load, and for calculating, for each subfield, the maximal difference of line loads of two consecutive lines of the display panel, and
- means (17) for selecting, for each subfield, a sustain frequency in accordance with its maximal load difference in order to reduce line load effect.

17. Device according to claim 16, characterized in that the calculation of the maximal load difference is only carried out only for lines whose load is greater than a minimal load.

18. Device according to claim 17, characterized in that the minimal load for a line is equal to 10% of the amount of luminous elements in a line of the display panel.

19. Device according to one of claims 16 to 18, characterized in that it comprises further a time filter (16) for calculating, for each subfield, the mean value of maximal load differences between two consecutive lines

calculated for the current frame and a plurality of frames (T-1) preceding said current frame, said mean value being used by the selecting means (17) for selecting the sustain frequency.

20. Device according to one of claims 16 to 19, characterized in that the number of sustain pulses of each subfield is adjusted in accordance with the number of luminous elements to be activated for displaying the current picture and with the selected sustain frequency for said subfield.

21. Device according to claim 20, characterized in that it comprises :

- a calculation means (12) for calculating a first average power level (APL(t)) representative of the power needed by the display panel for displaying the current picture with a reference sustain frequency,

- a first look up table (18) for delivering, for each subfield, an adjustment coefficient (Adj(n)) in accordance with the corresponding maximal difference of line loads, said adjustment coefficient (Adj(n)) corresponding to the ratio between the selected sustain frequency for said subfield and a standard sustain frequency,

- a multiplier (19) for multiplying, for each subfield, said adjustment coefficient with a maximal amount of sustain pulses and delivering an adjusted maximal amount of sustain pulses for each subfield,

- an adder (20) for summing the adjusted maximal amount of sustain pulses of all subfields of the frame,

- a second look up table (21) for converting said sum of adjusted maximal amount of sustain pulses into a second average power level (APL'(t)),

- a means (22) for selecting the maximal level (APL"(t)) between the first and second average power levels (APL(t), APL'(t)), and

- a third look up table (23) for converting said maximal level (APL"(t)) into an amount of sustain pulses for each subfield.

22. Device according to claim 16, characterized in that it comprises :
- means (13) for encoding the picture data into subfield data,
- means (21) for calculating the load of each subfield on the basis of said subfield data, and
- means (22,23) for adjusting the number of sustain pulses of the subfields on the basis of their load in order to have a same relation of proportionality between the luminance produced by the persistent luminous elements for the subfields and their weights.

23. Device according to Claim 22, characterized in that the means for adjusting the number of sustain pulses of a subfield comprises :
- means (12,13) for providing a first number of sustain pulses (NB_1) for said subfield,
- correction means (22) for defining a correction value to be subtracted to said first number of sustain pulses on the basis of the load and the number of sustain pulses of said subfield; and
- means (23) for subtracting said correction value from said first number of sustain pulses in order to have a second number of sustain pulses (NB_2) for said subfield.

24. Device according to Claim 23, characterized in that the correction means are a look up table (22) with the load and the number of sustain pulses of said subfield as input signals.

25. Device according to Claim 24, characterized in that the correction values stored in the look up table (22) are achieved by :
- measuring the luminance produced by a plurality of luminous elements of the display means for all first numbers of sustain pulses comprised between 1 and the first number of sustain pulses M of the highest weight subfield and for a plurality of non-zero loads,

- determining, for each one of said first numbers of sustain pulses and each one of said loads, the luminance attenuation compared with a reference luminance measured for the same number of sustain pulses and the highest one of said loads, and
- computing, for each one of said first numbers of sustain pulses and each one of said loads, the correction value by multiplying the determined luminance attenuation with said first number of sustain pulses.

26. Device according to Claim 24, characterized in that the correction values stored in the look up table (22) are achieved by :
- measuring the luminance produced by a plurality of luminous elements of the display means for a specific first number of sustain pulses and for a plurality of non-zero loads,
- determining, for each one of said loads, the luminance attenuation compared with a reference luminance measured for the highest one of said loads, and
- computing, for each one of said loads and for said specific first number of sustain pulses, the correction value by multiplying the determined luminance attenuation with said specific first number of sustain pulses.

27. Device according to Claim 26, characterized in that the specific first number of sustain pulses is greater than 20.

28. Device according to one of Claims 23 to 27, characterized in that it comprises means (24) for rescaling the second numbers of sustain pulses of the plurality of subfields in order to redistribute in each subfield an amount of the subtracted sustain pulses proportionally to its second number of sustain pulses.

29. Device according to one of claims 22 to 28, characterized in that it comprises means (12,13) for rescaling, before adjusting the number of

sustain pulses of each subfield on .the basis of its load, said number of sustain pulses in order that the average power level needed by the display means for displaying the picture be approximately equal to a fixed target value.

30. Plasma display panel comprising a plurality of persistent luminous elements organized in rows and columns, characterized in that it comprises a device according to one of the claims 16 to 29 for compensating load effect.